A.D. 1866, *4th June.* N° 1546.

SPECIFICATION

OF

MAURICE COHEN ROGERS.

FITTING ARTIFICIAL TEETH.

LONDON:
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1866.

A.D. 1866, 4th June. N° 1546.

Fitting Artificial Teeth.

LETTERS PATENT to Maurice Cohen Rogers, of 18, New Burlington Street, in the County of Middlesex, Member of the Royal College of Surgeons, Surgeon Dentist, for the Invention of "IMPROVEMENTS IN THE METHOD OF AND APPARATUS FOR FITTING ARTIFICIAL TEETH AND RETAINING THEM IN POSITION."—A communication from abroad by Moss Jones, of Brussels, in the Kingdom of Belgium.

Sealed the 30th November 1866, and dated the 4th June 1866.

PROVISIONAL SPECIFICATION left by the said Maurice Cohen Rogers at the Office of the Commissioners of Patents, with his Petition, on the 4th June 1866.

I, MAURICE COHEN ROGERS, of 18, New Burlington Street, in the County of Middlesex, Member of the Royal College of Surgeons, Surgeon Dentist, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN THE METHOD OF AND APPARATUS FOR FITTING ARTIFICIAL TEETH AND RETAINING THEM IN POSITION," communicated to me from abroad by Moss Jones, of Brussels, in the Kingdom of Belgium, to be as follows:—

This Invention has for its object an expeditious manufacture of sets of artificial teeth, and it relates, first, to the striking up of the plates to the form of the mouth; secondly, to fitting or shaping the teeth; thirdly, to forming the holes in the plates for the supporting pins; and, fourthly, to fixing the spring heads. For striking up the plates a plaster model is first taken as is usual, and two holes are drilled in the back in which screws with conical heads as long as the shanks are inserted loosely, so that when the mould is taken they remain therein, and when the metal is poured in for the casting they are embedded in it but without adhering, and they are withdrawn thence and ordinary screws are inserted. The die or counter is then obtained and the pattern taken in metal leaf or paper, holes being made therein to correspond with the screw holes, and then the gold or metal plate is cut out and secured to the cast, whereby it is prevented from shifting, and it is then hammered between cast and die. The plate being thus secured is certain of being struck up to its proper form.

The improved mode of fitting or shaping artificial teeth is as follows:— First, a mould or cast of the teeth intended to be used is made, and from this teeth in plaster, sulphur, resinous clay or other soft substance are cast or produced, these are fitted and placed in the mould or cast which is cut down to the height of the teeth. The soft teeth are then taken from the mould or cast and the teeth intended to be used are introduced therein and ground or cut down to the proper height, which is indicated by the edges of the mould. To render the fitting more exact a fitting surface produced in like manner may be brought to bear on the teeth and shew where these still require to be ground if needful.

An improved mould, frame, or apparatus suitable for the purpose is made of two main portions; each portion consists of three sections; the parts are connected by hinges formed by inserting pins through rings, eyes, or sockets on the edges of the sections, transverse pins fastened in place by removeable heads are passed through the frame or mould; the teeth are passed on the pins and shoots or funnels, made also in sections, hinged together, are fastened to the upper half, and plaster is poured in, for which purpose the ends of the central section of the upper portion are made to open and close.

The mode of forming the holes in the plate consists in using a box or frame made preferably of two portions connected together. The soft or temporary teeth are fitted in the plate, and the teeth and plate are coated with an adhesive substance and placed in the box, into which plaster or other plastic material is poured to hold the teeth and plate firmly, and the holes are then drilled through the soft teeth into the plate, so that they (the holes) are necessarily in accurate position. For American teeth or flat teeth, that is to say, teeth having a flat lingual or inner surface pins combined with perforated plates are used, on these the artificial teeth are placed, their pins being in the holes, and they are then moulded, after removing them wires are placed in the holes of the pin plates, the pins are replaced and plaster teeth produced and backed with lead or like substance from which the gold or final backing is produced, and then riveted on the intended teeth which are replaced in the mould as above. In attaching the spring heads ready made spring heads are used the spring head being on a small plate with a pin or wire down the middle. The plate which receives the teeth is perforated and the spring head plates fitted by inserting the pin or wire in the plate.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Maurice Cohen Rogers in the Great Seal Patent Office on the 4th December 1866.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, Maurice Cohen Rogers, of 18, New Burlington Street, in the County of Middlesex, Member of the Royal College of Surgeons, Surgeon Dentist, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Fourth day of June, in the year of our Lord One thousand eight hundred and sixty-six, in the twenty-ninth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Maurice Cohen Rogers, Her special licence that I, the said Maurice Cohen Rogers, my executors, administrators, and assigns, or such others as I, the said Maurice Cohen Rogers, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "Improvements in the Method of and Apparatus for Fitting Artificial Teeth and Retaining them in Position," communicated to me from abroad by Moss Jones, of Brussels, in the Kingdom of Belgium, upon the condition (amongst others) that I, the said Maurice Cohen Rogers, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Maurice Cohen Rogers, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, as communicated to me, reference being had to the accompanying Drawings and to the letters and figures marked thereon, that is to say :—

This Invention has for its object an expeditious manufacture of sets of artificial teeth, and it relates to the fitting of the teeth and the retaining them in position. For striking up the plates to the exact form of the mouth in order to retain the teeth in position a plaster model is first taken as usual, and two holes are drilled in the back of it in which screws with conical heads as long as their shanks are inserted loosely, so that when the mould is taken they remain in it, and when the metal is poured in for the casting they are embedded or screwed into it, and they are withdrawn thence and ordinary screws inserted; the die or counter is then obtained and the pattern taken, holes being made therein to correspond with the screw holes, and then the plate is cut out and screwed to the cast, whereby it is prevented from shifting, and it is then hammered between cast and die. The plate being thus secured is certain of being struck up to its proper form.

The improved mode of fitting artificial teeth or producing fitting surfaces thereon is as follows :—First, a mould or cast of the teeth intended to be used is made, and from this mould or cast teeth in plaster, sulphur, resinous clay, or other soft plastic substance are cast or produced; these are fitted and they are then replaced in the mould or cast which is cut down to the height of the soft teeth; the soft teeth are then taken from the mould or cast, and the teeth intended to be used are introduced therein and ground or cut down to the proper height, which is indicated by the edges of the mould. To render the fitting more exact a fitting surface produced in like manner is brought to bear on the teeth and shew where these still require to be ground if needful. The improved apparatus for the purpose is made as herein-after described.

I proceed particularly to describe the best means with which I am acquainted for carrying the Invention into effect.

The Invention in so far as it relates to retaining teeth in position refers to the arrangements which I am about to describe for striking up the plate, for unless the plate fits exactly the teeth which are attached to and supported by it will not be duly retained in position but will be liable to slip or shift. Now in striking up plates according to the ordinary method hitherto pursued, it is difficult to get the plate in the right position previously to its being hammered between the cast and die so as to prevent it from moving while being struck up. Now to obviate this evil I contrive the plate in the manner and by the means herein described, whereby I strike up and obtain a plate of the exact form required, and I am therefore enabled to keep the teeth securely in position in the mouth.

Figures 1 and 2 are perspective views of models of the upper and lower jaws. In the back part of each model two holes are drilled, each of which receives a screw such as shown in Figure 3, having a head *s* of truncated cone shape of the same length as its shank $s^\times$. These screws lie freely in the holes, and are not screwed therein. When the clay or sand moulds are produced from the model the screws which were in the model remain in corresponding places in the moulds, but being inverted they are retained by the form of their heads. When metal is run into the mould to form the castings, and such metal sets, the screws will be found screwed into such casting. The screws need not be used in the second casting, and they are withdrawn before the die or counter is taken, and in the holes which received them ordinary screws of the same diameter are inserted. The metal leaf or paper pattern is then taken, the ordinary screws are removed, and the pattern is stamped between cast and die. In such pattern there will appear two small depressions formed by and corresponding in position with the holes which received the screws. These depressions are pierced through, and the gold or other metal intended to form the plate is cut or shaped and then perforated in the parts corresponding with the perforations in the pattern; ordinary screws are then passed through the holes in the plate and screwed into the cast to tighten the plate between the head of the screw and the cast. The plate when thus held will not be moved when struck up, and it will be quickly hammered into shape; the plate thus made prevents the sets of teeth from shifting, and retains them in position. When the plates are to be annealed the screws can be readily withdrawn and replaced.

I next proceed to describe the Invention in so far as it relates to fitting teeth, or forming the fitting surfaces thereof. Figures 4 to 20 inclusively illustrate this part of the improvements.

I proceed to describe an apparatus which I use for carrying on the process. This apparatus consists of four principal portions A, B, G, G.

Figure 4 is a plan, and Figure 5 end view of the part A, which consists of three pieces, a central plate *a*, and two side plates *b*, *b*. Figure 6 is a plan, and Figure 7 longitudinal section of the central plate *a*. The part B also consists of three pieces, namely, a central plate $a^\times$ and two side plates $b^\times$. The parts A, B, combined form a receptacle for mould or containing and casting fourteen teeth, one half of each tooth being moulded in the part A, and the other half in the part B. Of course, the apparatus may be made for a larger or smaller number than fourteen teeth. Figure 8 is a plan of the parts A and B when connected together, but with the part $a^{\times}$ thrown open, and Figure 9 end view of parts A, B, closed. Figure 10 is a plan and Figure 11 longitudinal section of one of the side plates $b^{\times}$. The plate a is connected with the plates b, b, by pins p, p, passing through eyes r on the plates a, b. The plates a, b, have raised ends (see Figures 5, 7, 9). j, j, are central longitudinal ribs on the plates a, $a^{\times}$; d, d, are moulds cast on the plates b, b, having raised and sunken parts; c, c, are eyes or rings on the edges of the moulds d disposed in pairs, that is to say, the short and long spaces between these eyes are alternated (as shewn in Figure 4). The plates $b^{\times}$, $b^{\times}$, contain moulds $d^{\times}$ similar to the moulds d; m are openings between the raised parts of the mould $d^{\times}$. Also, instead of pairs of eyes c there are eyes $c^{\times}$ on the edges of the mould $d^{\times}$ between the openings m, so arranged that when the plates b are applied on the plates $b^{\times}$ edge to edge, as in Figures 8 and 9, the eyes $c^{\times}$ alternate with or lie between the pairs of eyes c in the longer intervening spaces, and the moulds d, $d^{\times}$, are so arranged that when the plates b, $b^{\times}$, are thus placed together the sunken parts of the mould d come opposite the sunken parts of the mould $d^{\times}$, and thus the two combined form a complete mould for the fourteen teeth. The plates a, $a^{\times}$ have eyes $r^{\times}$ on their edges through which pins p^1, p^2, are passed to connect the plates together. h, h, are sockets or staples on the plates a, $a^{\times}$, to receive the feet $g^{\times}$ of the frames G herein-after referred to. I would mention that when in all the various stages of my process I am about to use plastic or moulding substances I first oil the surfaces intended to be brought into contact therewith to prevent adhesion when the moulding or plastic substance sets.

I first describe the process as applied to what are called tube teeth or mineral artificial teeth having a tube or central hole to receive the supporting pins. First, I take the part A formed by fastening the parts a and b together by the pins p; I place it as shown in Figure 4, and I fill it with gutta percha, plaster of Paris, resinous clay, silicious substance, or other ordinary plastic material capable of setting readily; I then insert therein the mineral artificial teeth, which I have to fit. For this purpose I use pins such as shewn on an enlarged scale at E, Figure 12, but spring pins or other convenient forms may be used. Each pin E has a hollow or tubular head y, and it has a recess z near the end of the shank. Two teeth T are placed on each pin, the pin being passed through the central hole or tube of each tooth, and each tooth is placed with its fitting surface end outermost and with half its lingual surface and half its labial surface upward, the other half of the lingual and labial surfaces being downwards. The pins E are arranged in a row with their heads y in one direction in recesses k, on one plate b level with the eyes c of such plate, one head being in each short space between the eyes of each pair of eyes c (see Figure 4), and when all the pins are in place a long pin or rod f is passed through the eyes c and heads y. The opposite ends of the pins lie in notches k formed for that purpose on the other plate b, and are held down by a pin $f^{\times}$ which passes through the eyes c of such plate and rests on the recesses z; the teeth being pressed into the plastic substance in A an impression of one-half of each tooth of the whole number is produced therein simultaneously; and when the plastic substance sets the pins f, $f^{\times}$, are withdrawn and the part B is placed upon the part A, that is to say, first the plates $b^{\times}$ are placed on the plates b edge to edge, as in Figures 8 and 9, and they are fastened together by passing the pin f through the eyes c and y, and the pin $f^{\times}$ through the opposite eyes c. Next the plate $a^{\times}$ is connected with the plate a by passing the pin p^1 through the eyes $r^{\times}$ at one end of the plates; the plate $a^{\times}$, which turns on this pin as on a hinge, is then opened back as shewn in Figure 8; the plastic material is then introduced into the part B, and when this part is filled the plate $a^{\times}$ is closed down between the plates $b^{\times}$, as shewn in Figure 9, and fastened to the plate a by the pin p^2, passing through the eyes $r^{\times}$. The other half of the teeth will thus be imprinted in the plastic substance in the part B. The pins p^1, p^2, f, $f^{\times}$, are then withdrawn, and the part B is removed from the part A, and the pins E with the teeth on them are also removed. Each part A and B will now contain a cake of plastic substance duly set; each cake will be impressed with the shape of one-half of each of the fourteen teeth, and will present the appearance of M, Figure 13, taking the full red line as the outer contour, the parts v representing the sunken parts or indentations produced by the teeth, each impression of course accurately corresponding with half of the tooth. Herein-after I call each cake M the "mould." The mineral teeth T are next taken off the pins E, and these pins are replaced in the mould M in the lower part A, and a small piece is cut away from the outer edges of the mould in the upper part B at the parts corresponding with the fitting surfaces, as shown by the line x, Figure 13, thereby forming communications between the sunken parts v and the openings m, m. The parts A and B containing their respective moulds M are again put together and fastened by the pins f, $f^{\times}$, p^1, p^2, and thus combined they are placed with one of the sides uppermost, as shown in Figure 14, thus presenting a sort of trough or channel, into which I pour warm fluid sulphur which flows through the openings m into the mould recesses v, and when it sets the apparatus is reversed to bring its opposite side uppermost, and sulphur is poured in like manner into that side; when this sulphur has set the apparatus is opened and fourteen sulphur teeth W will be found cast or moulded in the moulds M, such teeth being fac-similes in shape and size of the mineral artificial teeth T. Instead of using sulphur other soft plastic substances may be used. When the sulphur or soft fac-simile teeth W are set they are taken from the moulds M and are then fitted by hand just as in fitting ordinary mineral artificial teeth, but as they are made of soft material this is quickly accomplished. The fac-similes thus fitted are replaced in the sunken parts *v* of the moulds M, and the plates *b*, $b^{\times}$, are removed from the centre plates *a*, $a^{\times}$, which containing their moulds M and fac-simile teeth *w* are fastened together by the pins p^1, p^2, as shewn at Figure 15; these fac-similes having been "fitted" will of course be shorter than the recesses *v*, wherefore the outer edges of the moulds at the parts round these recesses *v* are cut down even or flush with the sulphur or fac-simile teeth therein, that is to say, with the fitting surfaces thereof as indicated by the black line *l*, (Figure 13.) I then take two frames G, G, shewn in Figures 16, 17, 18, 19. Figure 16 is a plan, Figure 17 an end view, and Figure 18 a side view of either one of these frames G; they are exactly similar to each other. Each frame is an oblong piece consisting of two long sides and two short ends; they are hollow or open through top and bottom, and are strengthened by stays *g*, and they are provided with pins or feet $g^{\times}$. I place these frames G on the centre plates *a*, $a^{\times}$, on which they are held by their pins $g^{\times}$, which drop in the sockets or staples *h*. The apparatus thus disposed, as shown in Figure 19, is placed with the top or open part of one of the frames G uppermost, and the plastic material is placed on the frame G through the open top thereof, and it is pressed down therein till the frames are full, whereby the plastic substance being forced against the fitting surfaces of the fac-simile or sulphur teeth impressions N (Figure 20) of the said fitting surfaces will be produced in the plastic substance $M^{\times}$ (Figure 20) in the frame G; the apparatus is then reversed and the operation repeated in the other frame G. When the plastic substance has set I remove the frames G with their moulds $M^{\times}$, N, from the plates *a*, $a^{\times}$, I unfasten the plates *a*, $a^{\times}$, and I take out the fac-similes W; I then replace the artificial mineral teeth in the recesses *v*, and I refasten the plates *a*, $a^{\times}$, by the pins p^1, p^2, as shown in Figure 15. Now the edge of the mould shows the required height of the teeth, wherefore I cut or grind down the mineral teeth at the lathe, or otherwise reduce them till they correspond in height with the height of the recesses *v*, that is to say, till the fitting surfaces of the teeth are brought exactly flush or even with the edges of these parts *v*. To test the accuracy of the fitting surfaces thus produced I cover the copies or counterparts N, Fig. 20, in the frames G (Figure 18) with pigment or coloring matter, and I replace the frames G on the plates a, $a^\times$, as in Figure 19, so as to bring the counterparts N (in the frames G) close upon the fitting surfaces of the teeth in the moulds M in the plates a, $a^\times$. If the frames do not exactly close on the plates a, $a^\times$, it is clear that the fitting surfaces are not accurate and the pigment will mark the superfluous or projecting parts thereof, which are thereupon removed by the lathe or by any ordinary means, and the teeth will thus be accurately fitted. When the Invention is applied to American or flat teeth, that is to say, teeth without tubes or central orifices, but having pins at back, I fix plates of ample length riveted or not on the mineral teeth before producing the sulphur or other soft fac-similes; the pins E are of course not required if the plate is not riveted; I place the teeth in the apparatus A, B, in such wise that their entire lingual surface is in one part, say A, and the entire labial surface in the other part B, although if riveted they could be disposed as described in reference to tube teeth. In the former case the teeth are pressed gently in the plastic substance, which must be only a little softened or it would yield too readily. The remainder of the operation is the same as for tube teeth, except that the soft fac-similes are made a little thicker than the originals to represent the backing before fitting the mineral teeth; I place them in the moulds which indicate the proper height to be given to the backing plates, and after removing any superfluous metal the teeth are ground like the tube teeth when the frames G close on the plates a, $a^\times$, and show that the teeth are fitted; they also shew that the backing plates are fitted. Masticating and side surfaces of teeth may also be fitted in the manner described for the lifting surfaces. To adapt the apparatus for copying masticating surfaces it has only one row of moulds d, that is to say, teeth on one side only, the centre plate being very narrow and provided with four removeable sides, so that superfluous material may be cut away from both fitting and masticating ends. Separate frames G would be necessary, one for the fitting surfaces, the other for the masticating surfaces. To adapt the apparatus for fitting sides of teeth transverse partitions are placed on the centre plates and are withdrawn to cut away the moulding substance and grind the sides. When the apparatus is made for a large number of teeth, and is too heavy and inconvenient for hand, I mount it on wheels or rollers free to run on an oscillating or rocking tramway, under which is a strong spring which tends to force the tramway upward and press the teeth against the corundum wheel or grinding implement. The apparatus may be constructed with several rows of moulds arranged parallel or radially so as to contain teeth in parallel or radial rows, there being as many divisions or compartments to contain plastic substance as there are such rows. Instead of making the apparatus oblong, as shown in the Drawings, it may be made circular, elliptical, triangular, square, or of other form.

And indeed I wish it to be understood that although I consider and claim the arrangement of apparatus herein-before described and represented in Figs. 4, 5, 6, 8, 9, 14, 16, 15, 7, 10, 11, 12, 17, 18, 19, as novel and original, yet I do not restrict myself for carrying the said fitting process into effect to the use of the said apparatus, though I believe it the best adapted for the purpose.

Having now described the nature of the said Invention, and in what manner the same may be performed, I declare that I claim,—

First, the employment and construction of plates herein-before described, that is to say, in so far as regards the use of screws with long conical heads in producing such plates, whereby the plate is so struck up as to retain the teeth in position, as herein-before described.

Second, the process of fitting teeth herein-before described, according to which casts or fac-similes of the mineral artificial teeth are produced in a plastic or soft substance on which the proper fitting surfaces are produced or obtained, and these surfaces are exactly copied and tested on the mineral artificial teeth, substantially as set forth.

Third, the general arrangement and combination of parts constituting the improved apparatus used when fitting teeth, substantially as described.

In witness whereof, I, the said Maurice Cohen Rogers, have hereunto set my hand and seal, this Third day of December, in the year One thousand eight hundred and sixty-six.

M. C. ROGERS. (L.S.)

Witness.
M. Henry,
Patent Agent,
68, Fleet Street,
London.

LONDON:
Printed by George Edward Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty. 1866.

A.D.1866, JUNE 4, No. 1546
ROGERS' SPECIFICATION

(1 SHEET)

FIG. 1.

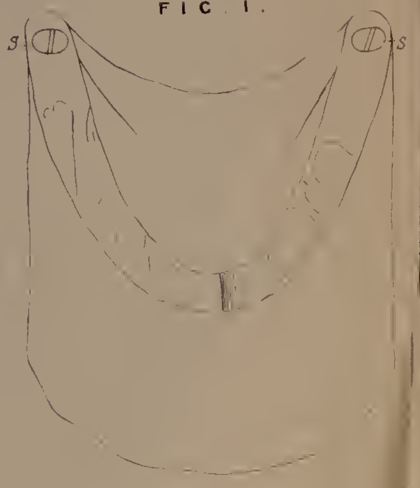


FIG. 2.

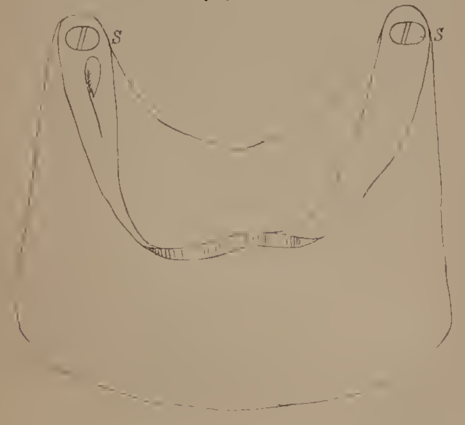


FIG. 3.

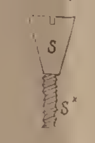


FIG. 4.

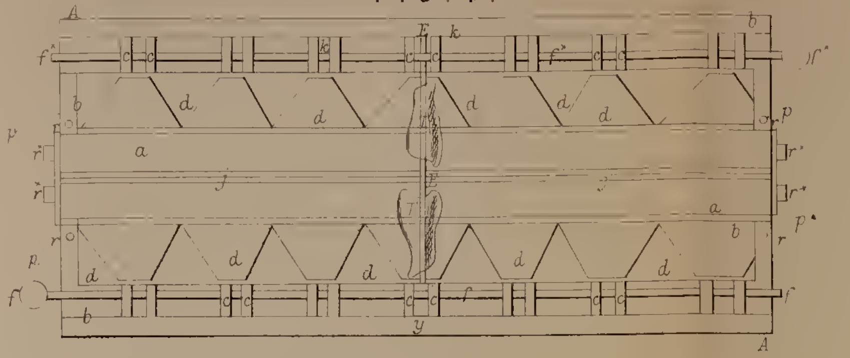


FIG. 5.

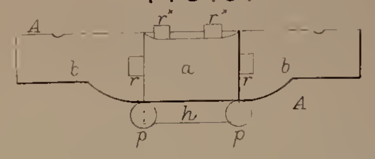


FIG. 6.

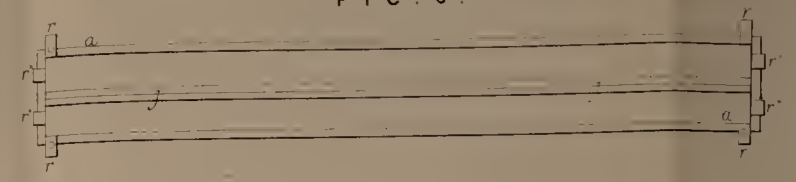


FIG. 8.

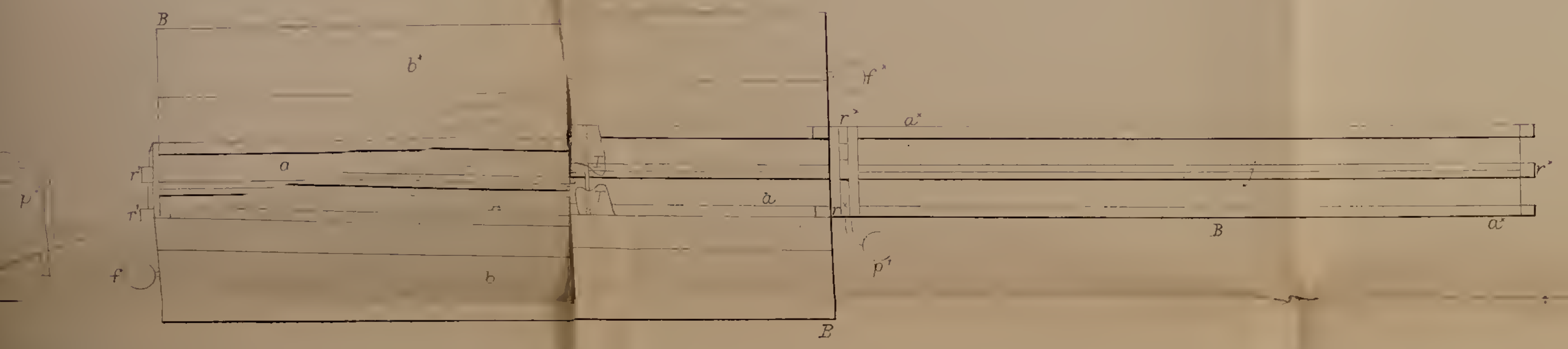


FIG. 9.

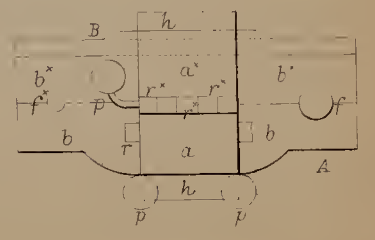


FIG. 12.

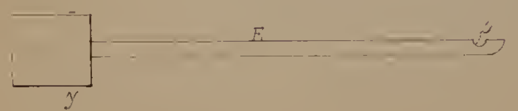


FIG. 13.

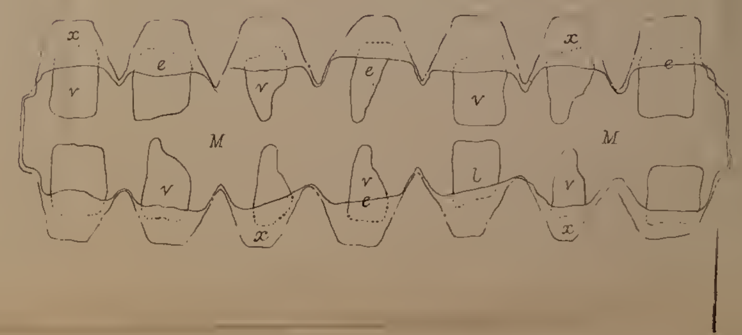


FIG. 14.

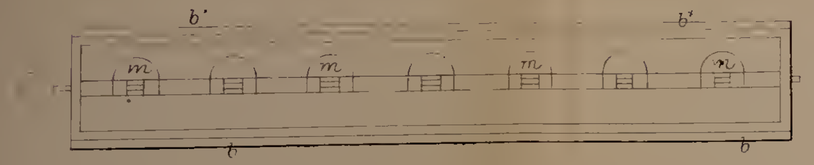


FIG. 16.

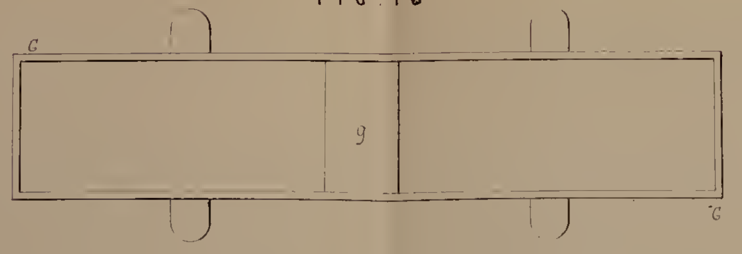


FIG. 17.

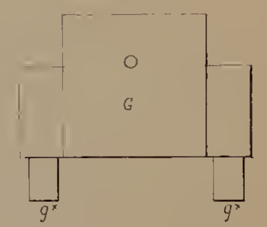


FIG. 18.

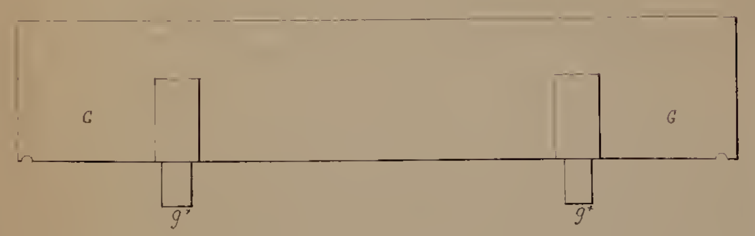


FIG. 19.

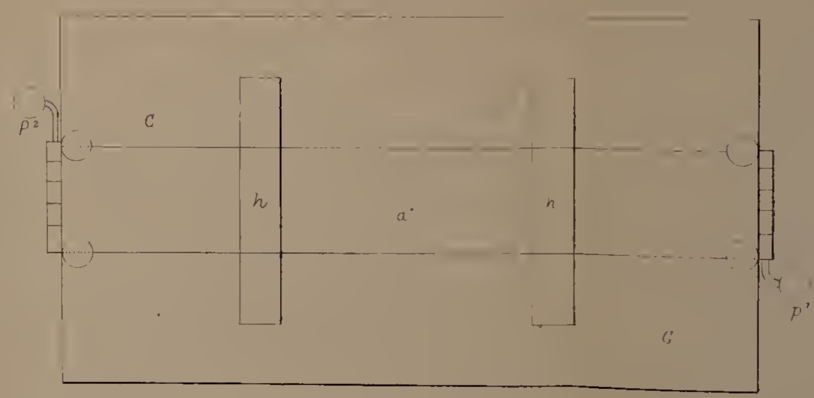


FIG. 11.

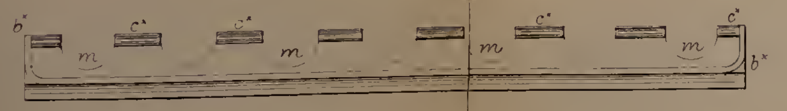


FIG. 15.

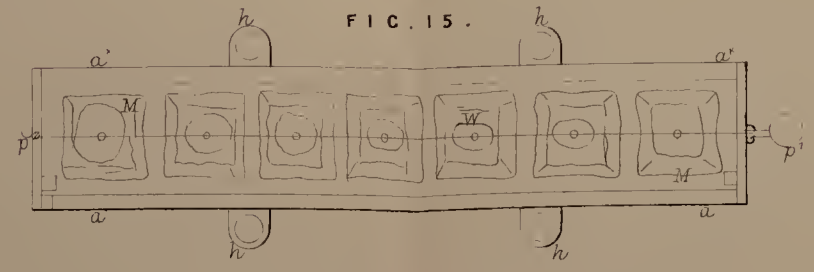


FIG. 20.

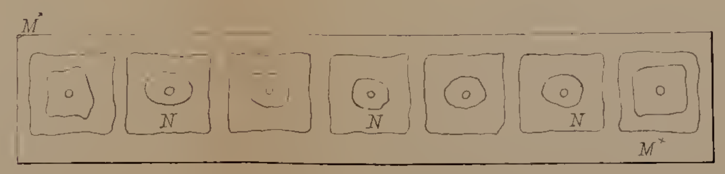


FIG. 10.

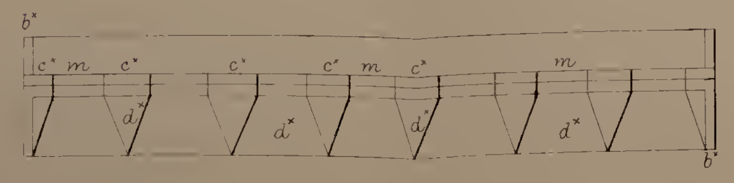
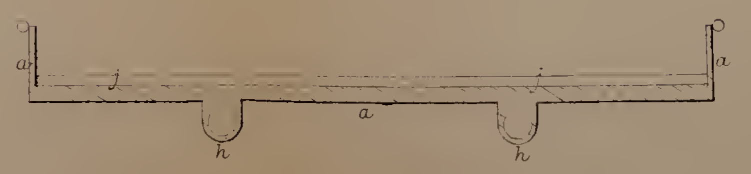


FIG. 7.



The filed Drawing is partly colored.

Drawn on Stone by Malby & Sons.

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